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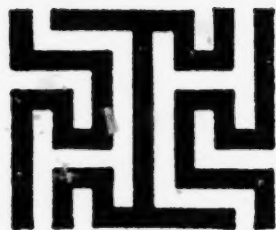
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ABSTRACT

TO DETERMINE THE EFFECTS OF ORAL SENTENCE-STRUCTURE EXERCISES UPON STUDENT WRITING, A 1-YEAR EXPERIMENT WAS CONDUCTED WITH TWO RANDOMLY MATCHED FOURTH-GRADE CLASSES OF APPROXIMATELY EQUAL SIZE, ONE CONTROL CLASS AND ONE EXPERIMENTAL CLASS. THE EXPERIMENTAL GROUP REGULARLY COMPLETED EXERCISES DESIGNED TO TEACH STUDENTS TO PRODUCE SENTENCES INCORPORATING (1) "WHO" AND "WHICH" ADJECTIVAL CLAUSES OR ELEMENTS DERIVED FROM THESE CLAUSES, (2) ADVERBIAL CLAUSES IN INITIAL AND FINAL POSITION, AND (3) NOMINALIZATIONS IN THE SUBJECT AND PREDICATE. WRITTEN EXERCISES BASED ON THE ORAL DRILLS WERE COMPLETED AT THE END OF EACH CLASS PERIOD. BEFORE AND AFTER EACH OF THE TWO SEMESTER-LONG EXPERIMENTAL PHASES, TESTS WERE ADMINISTERED IN WHICH STUDENTS WROTE A 30-MINUTE IMPROMPTU COMPOSITION ABOUT A SHORT FILM. RESULTS SHOWED THAT STUDENTS IN THE EXPERIMENTAL GROUP WROTE MORE WORDS IN LESS TIME, USED MORE OF THE PRACTICED SENTENCE STRUCTURES, AND USED A GREATER PROPORTION OF COMPLEX SENTENCES THAN DID CONTROL GROUP STUDENTS. CONSEQUENTLY, THE ORAL DRILLS AND SUPPLEMENTARY WRITTEN EXERCISES WERE CONCLUDED TO HAVE FAVORABLY AFFECTED THE WRITING OF FOURTH GRADERS. (TABLES OF FINDINGS ARE INCLUDED.) (JM)

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After giving a class of fourth graders regular oral practice in the combining of sentences, the authors found that students wrote more complex sentences than a control group which had no such practice.

The effect of systematic oral exercises on the writing of fourth-grade students

BARBARA D. MILLER
Okemos Public Schools, Michigan
JAMES W. NEY
Michigan State University

Although a number of studies have investigated the relationship of a knowledge of grammar, especially the newer grammars such as transformational grammar, on the writing ability of school students, very few have attempted to examine the effect of the students' manipulation of grammatical structures on their ability to write. Recently, Wardhaugh¹ and Bateman and Zidonis² have investigated the effect of a knowledge of transformational grammar on writing. (Both writers give a summary of previous research using other types of grammars.) Fisher,³ however, reports a study dealing with the manipula-

¹ R. Wardhaugh, "Ability in written composition and transformational grammar," *The Journal of Educational Research*, 1967, 60, 427-429.

² D. R. Bateman and F. J. Zidonis, *The effect of a study of transformational grammar on the writing of ninth and tenth graders* (Champaign, Ill.: NCTE, 1966).

³ J. C. Fisher, *Linguistics in remedial English* (The Hague: Mouton, 1966).

tion of grammatical structures by remedial writing students on the college level and the effect of these manipulative exercises on the writing of the students in the experiment. Similar experiments in the grades have been performed by Ney⁴ and Raub.⁵ These experiments have been discussed in detail by Griffin.⁶ None of these studies, however, was performed with a large group of elementary school students over an extended period of time. Thus, through the entire 1966-1967 academic year, a classroom experiment was conducted to determine the effect of systematic oral language exercises on the writing of fourth-grade students in a typical suburban middle class school.

EXPERIMENTAL DESIGN

The experimental design called for two randomly matched fourth-grade classes with an approximately equal number of students in each class. One of these classes functioned as an experimental group, the other as a control group. The researcher, serving as the instructor, subjected the experimental group to a predetermined amount of oral language drilling with exercises designed to foster transfer of training to writing. The control group pursued a normal course of studies (reading, and writing free compositions) without being subjected to any amount of the oral drilling which formed the basis of the experimental methodology. The effectiveness of the oral drilling was measured on pretests and posttests based on the methodology developed by O'Donnell, Griffin, and Norris for eliciting language from elementary school children.⁷ In short, this methodology consisted of the elicitation of oral or written language by the showing of a film. Since, in this experiment, the purpose was to study only written language, in the pretests and posttests, the students wrote a half hour long impromptu composition about the film shown. These compositions were then subjected to an intensive analysis using the measurements de-

⁴ J. W. Ney, "Applied linguistics in the seventh grade," *English Journal*, 1966, 55, 895-897, 902.

⁵ Donna K. Raub, *The audio-lingual drill technique: an approach to teaching composition* (Master's thesis, George Peabody College for Teachers, 1966).

⁶ W. J. Griffin, *Developing syntactic control in seventh grade writing through audio-lingual drill on transformations* (Paper read at the annual meeting of the American Educational Research Association, New York City, February 18, 1967).

⁷ R. C. O'Donnell, W. J. Griffin and R. C. Norris, *Syntax of kindergarten and elementary school children: a transformational analysis* (Champaign, Ill.: NCTE, 1967).

EXPERIMENTAL PROCEDURE

vised by the aforementioned researchers, Kellogg W. Hunt,⁸ and others to see if the oral exercises had in fact effected a change in the writing of the experimental group.

The experiment was divided into two periods of time. The first phase extended from September 19 to December 9, 1966. On the first day and the last day of this period both the experimental and the control group were administered a test using Coronet film No. 309: *Spotty, Story of a Fawn*. Contrary to the methodology used by O'Donnell, Griffin and Norris, the film was shown with the sound on; throughout the film, a narrator told the story of Spotty, with music filling in the background. Although it was realized that the students might use the grammatical structures peculiar to the narration and not common in their own writing, it was felt that this would not invalidate the experiment since the contamination would be as great for the control group as it would be for the experimental group. Thus the difference in the performance of the two groups would be due to the experimental methodology.

Similarly, a pair of pretests and posttests was administered January 9 and June 1, 1967, using Encyclopaedia Britannica film No. 878, *The Hunter and The Forest*. (For purposes of experimentation, this film proved to be superior to the previously mentioned film since the sound track contains no dialogue or narration.) These tests marked the beginning and the end of the second phase of the experiment. In the first phase, the experimental class was exposed to the experimental methodology four days a week during 37 periods of from thirty to forty minutes. In the second phase of the experiment, the students in this class were exposed to the experimental methodology two days per week during 30 periods which averaged from forty to fifty minutes in length.

For the entire first phase of the experiment and for the first two months of the second, the class hour for the experimental group was conducted within the following format:

1. The structure to be practiced, written on the blackboard, was read by the students orally following the teacher's model

⁸ K. W. Hunt, *Differences in grammatical structures written at three grade levels, the structures to be analyzed by transformational methods* (U.S. Office of Education Cooperative Research Project No. 1998. Tallahassee, Fla.: Florida State Univer., 1964). See also K. W. Hunt, *Grammatical structures written at three grade levels* (Champaign, Ill.: NCTE, 1965).

reading. Thus the instructor would read two cue sentences such as the following:

The boy put the old man down.

The boy was very tired.

After the reading of each sentence by the teacher, the students would perform a reading in chorus from the graphic representation of these sentences on the blackboard. Then the instructor would read these sentences in their combined form as the response sentence which is required in the exercise:

The boy, who was very tired, put the old man down.

The students also would perform choral reading of this sentence from the blackboard.

2. Ten sets of sentences with the same structure as the example sentence were then practiced orally by the entire class. The practice was conducted in the following fashion: (a) The instructor read the two cue sentences. (b) Individual students were requested on a voluntary basis to combine the two cue sentences into the required response sentence orally. (c) If the sentences were combined in the required form, the entire class was requested to say the sentence in unison. If the sentences were not combined as required, the instructor modeled the response for the students to repeat in unison. (d) Individual students were then called on to say the response sentence which had just been practiced. This last step was designed to make sure that each student could at least repeat the response sentence. After two or three exercises with uniform sentence types had been practiced, review exercises were constructed which contrasted the differing sentences.

3. After the oral practice, the students and the instructor joined in a choral reading of a passage of prose. Usually, this prose was taken from textbooks which the students were currently using for their science or social studies. At the start of the experiment, however, a rewritten version of Mark Twain's "The Celebrated Jumping Frog" and rewritten selections from *Huckleberry Finn* were used. In the second phase of the experiment, folk-tales revised and edited for foreign students were read in this fashion.⁹ Although the readings were not considered central to the experimental methodology, they were nevertheless deemed valuable because (a) they provided a linguistic context for the language exercises, (b) they provided

⁹ V. O. Binner, *American folktales I* (New York: Thomas Y. Crowell, 1966), and *International folktales I* (New York: Thomas Y. Crowell, 1967).

a convenient source for the vocabulary and structures used in the exercises, (c) they gave the students additional practice in the manipulation of oral language, and (d) they helped maintain the interest of the students in the language period since these readings were in themselves interesting.

4. Written exercises from the preceding day were distributed and reviewed by the students. Scores were announced so that the class as a whole would receive some idea of the progress made.

5. The exercise for the day was reviewed with the instructor reading the cue sentences and the students performing the combination exercises in unison.

6. One or two sets of cue sentences were read by the instructor, and the correct response sentences were written by the students. These exercises were graded out of class by the instructor to see if the number of papers on which all sentences were combined as required by the exercise increased from day to day. It is hypothesized that this exercise also helped to effect transfer of training from oral manipulation of sentences to the writing of these sentences.

After the second month of the second phase of the experiment, the methodology was varied somewhat. The exercise for the day was not reviewed (step 5). Rather a second set of cue and response sentences was practiced, generally sentences of a different structural type than the first set of cue and response sentences for any particular day. In other respects, however, each instructional period duplicated the format of the preceding one.

In all, the experimental methodology was designed to condition the students to produce three types of sentences: (a) sentences with *who* and *which* adjectival clauses and sentences with elements derived from these clauses, (b) sentences with adverbial clauses in initial and final position, and (c) sentences with nominalizations in the subject and predicate derived from underlying source sentences. Under the first type (a), students produced response sentences such as the following from their respective cue sentences:

CUE	RESPONSE
1. He looked at the boy. The boy came out of the river.	He looked at the boy, who came out of the river.
2. The people, who were working in the day, might see me.	The people, working in the day, might see me.

- | | |
|---|--|
| 3. The men, who were in the middle of the raft, might catch him. | The men, in the middle of the raft, might catch him. |
| 4. A wind, which was strong, began to blow. | A strong wind began to blow. |
| 5. The old man was very heavy. The boy carried the old man. | The old man, who the boy carried, was very heavy. |
| 6. The girl wouldn't wash the horse. The horse's back was very dirty. | The girl wouldn't wash the horse, whose back was very dirty. |

(Sentences of the type illustrated by examples 5 and 6 were not included in the exercises until the second phase of the experiment largely because they are quite difficult for elementary school students to handle. Approximately an equal number of sentences with *which* and *who* were included in the exercises.)

In the second type of sentences practiced (b), students combined two cue sentences using adverbial connectors. In the first phase of the experiment they attached the sentence with the adverbial subordinator in sentence initial position; in the second phase of the experiment they attached the subordinate clause in sentence final position, then they shifted it to sentence initial position as in the following illustrative examples:

- | CUE | RESPONSE |
|---|--|
| 1. Hophra would be caught.
He could be freed. | Hophra would be caught unless he could be freed. Unless he could be freed, Hophra would be caught. |
| 2. The princess couldn't be married. She was too proud. | The princess couldn't be married because she was too proud. Because she was too proud, the princess couldn't be married. |

The third type of sentence practiced (c) included a variety of subtypes, all of which were formed by the process of sentence combination; some of these, however, were later changed by the switching of sentence elements from one position to another as in the following examples:

- | CUE | RESPONSE |
|---|---|
| 1. Something disturbed the king.
The princess talked. | The talking of the princess disturbed the king. |
| 2. Something angered the beast.
The merchant was ungrateful. | The ungratefulness of the merchant angered the beast. |

- | | |
|---|--|
| 3. It was interesting.
He listened to the speaker. | It was interesting to listen to the speaker. To listen to the speaker was interesting. |
| 4. It seemed very cruel.
He shot the mule. | It seemed very cruel, shooting the mule. Shooting the mule seemed very cruel. |

The first type of structure, the *who* and *which* relative clauses and the elements derived from these clauses, was dealt with in 39 lessons. The second type of structure, the adverbial clauses, was dealt with in 31 lessons. The third type of structure, the nominalizations, was dealt with in 17 lessons. Not every lesson was devoted exclusively to one type of structure: many of the lessons, especially in the second part of phase two, dealt with different types of structures in different parts of the lessons; some of the lessons in phase one contrasted different structural patterns in the same part of the lesson.

RESULTS

In an effort to determine whether the experimental methodology had in fact given the students of the experimental group greater facility in the use of the structures which were practiced, the number of the occurrences of these structures on all of the pretests and posttests was counted. The numerical results thus obtained were submitted to rigorous statistical analysis for the 24 students in the control group and the 26 students in the experimental group who completed all of the pretests and posttests.

From an examination of Table 1, two things become evident: (1) both the control group and the experimental group showed an increase in the structures which were taught from the first pretest, but only the experimental group showed a statistically significant gain, and (2) by the time of the second series of pretests and posttests the students in the experimental group were using the structures which had been practiced by them far more frequently than the students in the control group even though both of these groups used these structures at an approximately equivalent rate in the beginning of the experiment. Furthermore, the gain evidenced by the experimental group was significant at the .001 level of confidence on the final posttest. The reason for the increase in the use of these structures by the control group on the first series of pretests and posttests is not known. At first, it was hypothesized that the number of occurrences of the taught structures increased with the number of words written. (See Table 2.) This, however, fails to explain the lack of such an increase for

Table 1
The Occurrence of the Structures Taught on the
Pretests and Posttests

	<i>Posttest 1</i>			<i>Pretest 1</i>			Mean Increment	F	P
	Total	M	SD	Total	M	SD			
C Group	29	1.2	1.4	50	2.1	1.7	.9	3.649	.062
E Group	30	1.2	1.4	73	2.8	2.3	1.4	9.588	.003**
	<i>Posttest 2</i>			<i>Pretest 2</i>			Mean Increment	F	P
	Total	M	SD	Total	M	SD			
C Group	80	3.3	3.2	79	3.3	2.4	.0	.002	.959
E Group	98	3.8	2.1	191	7.4	3.9	3.7	17.307	.001***

*Significant at the .05 level of confidence or less.
 **Significant at the .01 level of confidence or less.
 ***Significant at the .001 level of confidence or less.

Table 2
The Number of Words Written on Pretests and Posttests

	<i>Pretest 1</i>			<i>Posttest 1</i>			Mean Increment	F	P
	Total	M	SD	Total	M	SD			
C Group	1935	80.6	41.1	2932	122.2	44.5	42.4	11.289	.002**
E Group	1888	72.7	35.9	3934	151.3	54.2	78.6	38.101	< .0005***

	<i>Pretest 2</i>			<i>Posttest 2</i>			Mean Increment	F	P
	Total	M	SD	Total	M	SD			
C Group	2368	98.7	44.6	2900	120.8	52.7	22.1	2.477	.122
E Group	2892	111.2	46.6	4149	159.6	56.2	48.4	11.399	.001***

*Significant at the .05 level of confidence or less.

**Significant at the .01 level of confidence or less.

***Significant at the .001 level of confidence or less.

the control group on the second series of pretests and posttests. In effect, it might be that this increase in taught structures on the part of the control group is related to the narration on the film used to elicit the pretest and posttest compositions.

In any case, it became apparent that the experimental group wrote a greater number of words within the half-hour time limit than the control group and that this difference in the performance of the experimental subjects was statistically significant. (The results are given in Table 2.) From the total number of words written the following generalizations can be made: (1) students writing about a movie used as a stimulus situation will write more on their second encounter with the movie than on their first and (2) students subjected to oral and written structure drills increase their productivity in writing at a greater rate than those who are not subjected to these drills. In this regard, it is interesting to note that control group subjects produced compositions which averaged 120 words in length on both posttests; the experimental group subjects surpassed the control group subjects in productivity by writing compositions averaging almost 160 words on the final posttest. The least that can be said of the increased productivity in writing of the experimental group is that the experimental methodology did give these fourth-grade students more fluency and facility in writing.

A clearer picture of the experimental group's divergence from the control group on these two measures can be gained from an analysis of variance. In the number of words written, the performance of the experimental group is clearly superior to that of the control group.

From Table 3 it is apparent that on the pretests the performance of the experimental group was not significantly different from that of the control group. On the posttests, however, the performance of the experimental group did differ significantly at the .05 level of confidence and this difference was cumulative; that is, the experimental group continued to improve its performance so that the score on the second posttest was superior to the score on the first posttest in a comparison to the scores of the control group.

In a similar manner, as is shown in Table 4, the performance of the experimental group differed from the performance of the control group on the measure of the structures taught. (This measure is obtained by simply counting the number of

Table 3
Analysis of Variance: Number of Words Written
on the Pretests and Posttests

Source of Variance	Sum of Squares	df	Mean Square	F	P
PRETEST 1					
Between Categories	800.641	1	800.641	.540	.466
Within Categories	71171.779	48	1482.745		
Total	71972.420	49			
POSTTEST 1					
Between Categories	10598.008	1	10598.008	4.280	.044*
Within Categories	118852.871	48	2476.101		
Total	129450.880	49			
PRETEST 2					
Between Categories	1970.051	1	1970.051	.946	.335
Within Categories	99873.949	48	2080.707		
Total	101844.000	49			
POSTTEST 2					
Between Categories	18733.300	1	18733.300	6.293	.016*
Within Categories	142881.679	48	2976.701		
Total	161614.980	49			

Category 1 = C Group, N = 24; Category 2 = E Group, N = 26

*Significant at the .05 level of confidence or less.

**Significant at the .01 level of confidence or less.

***Significant at the .001 level of confidence or less.

occurrences on the tests of the sentence structures practiced by the experimental group and discussed earlier in this report.) On the measure of the structures taught, the experimental group showed the same kind of development that it did on the measure of the total words written, increasing to the first posttest, falling back on the second pretest and then increasing to the final posttest. On this measure, however, the performance of the experimental group did not attain a statistically significant level of difference from that of the control group until the second posttest. But when it did attain this level of performance, the difference between the two groups was significant at less than the .001 level of confidence.

This score is particularly gratifying. If the pretests and posttests simply tested the students on their ability to manipulate the structures as they were taught them from oral cues—a relatively weak test—it would be expected that the experimental

group would show a better score than the control group. On the pretests and posttests for this experiment, however, the test is whether the experimental group actually uses more of the structures practiced than the control group in a free composition, a relatively strong test. And the experimental group is clearly superior to the control group on this measure.

Table 4
Analysis of Variance: The Number of Structures Taught

Source of Variance	Sum of Squares	df	Mean Square	F	P
PRETEST 1					
Between Categories	.037	1	.037	.018	.893
Within Categories	97.342	48	2.028		
Total	97.380	49			
POSTTEST 1					
Between Categories	6.548	1	6.548	1.541	.220
Within Categories	203.872	48	4.247		
Total	210.420	49			
PRETEST 2					
Between Categories	2.371	1	2.371	.335	.566
Within Categories	339.949	48	7.082		
Total	342.320	49			
POSTTEST 2					
Between Categories	205.157	1	205.157	19.584	<.0005***
Within Categories	502.843	48	10.476		
Total	708.000	49			

Category 1 = C Group, N = 24; Category 2 = E Group, N = 26

*Significant at the .05 level of confidence or less.

**Significant at the .01 level of confidence or less.

***Significant at the .001 level of confidence or less.

The experimental group also showed growth in writing ability on one of the units of measurement developed by Kellogg W. Hunt. In his studies, Hunt found that the T-unit, or minimal terminable unit, provided the basis for a number of measures which indicated that the students were maturing as writers.¹⁰ In his study, the T-unit is basically a repunctuated, or properly punctuated, sentence. As students mature, they tend to use a greater proportion of multi-clause T-units in their

¹⁰ Hunt, *op. cit.*

writing.¹¹ On these measures, the experimental group showed a generally greater improvement than the control group. In particular, the ratio of multi-clause T-units (complex sentences) to single-clause T-units (simple sentences) increased more in the experimental group than in the control. (See Table 5.)

Table 5
The Number of Multi-clause and Single-clause T-units

	Pretest 1		Posttest 1		Pretest 2		Posttest 2	
	Total	M	Total	M	Total	M	Total	M
E Group Multi- Clause	34	1.3	84	3.2**	40	1.5	97	3.7***
C Group Multi- Clause	41	1.7	79	3.3**	33	1.3	43	1.8
E Group Single- Clause	241	9.3	468	18.0***	303	11.7	367	14.1
C Group Single- Clause	236	9.8	334	13.9*	256	10.7	282	11.2

*Indicates that the gain between pretest and posttest is significant at the .05 level of confidence.

**Indicates that the gain between pretest and posttest is significant at the .01 level of confidence.

***Indicates that the gain between pretest and posttest is significant at the .001 level of confidence.

Generally speaking, the experimental group subjects show a proportionately greater increase in the use of multi-clause T-units when this increase is compared to that of the single-clause T-units. The use of multi-clause T-units more than doubles from the second pretest to the second posttest (cf. mean of 1.5 to 3.7). The number of single-clause T-units does not show such a gain. The exception to this is the gains made by both control and experimental groups on the first posttest. Here the mean of the experimental group went from 1.3 to 3.2 and the mean of the control group went from 1.7 to 3.3 in the number of multi-clause T-units written. Since this phenomenon did not occur on the second posttest, it is hypothesized that the contamination from the dialogue on the film used as the

¹¹ Hunt, *Differences in grammatical structures*, p. 25.

Table 6
The Number of Words in Multi-clause and Single-clause
T-units

	<i>Pretest 1</i>		<i>Posttest 1</i>		<i>Pretest 2</i>		<i>Posttest 2</i>	
	Total	M	Total	M	Total	M	Total	M
E Group Multi- Clause	339	13.0	882	33.9**	529	20.3	1218	46.8**
C Group Multi- Clause	461	19.2	803	33.4*	438	18.3	581	24.2
E Group Single- Clause	1531	58.9	2955	113.7***	2322	89.3	2931	112.7*
C Group Single- Clause	1536	64.0	2079	86.6*	1904	79.3	2318	96.6

*Indicates that the gain between pretest and posttest is significant at the .05 level of confidence.

**Indicates that the gain between pretest and posttest is significant at the .01 level of confidence.

***Indicates that the gain between pretest and posttest is significant at the .001 level of confidence.

stimulus situation for the first pretest and posttest caused the performance of the control group to equal or even exceed that of the performance of the experimental group. (This same contamination effect is apparent in the use of a film with narration as a stimulus situation for testing in the Raub research as reported by Griffin.)¹²

This same phenomenon is observable in the number of words in multi-clause and single-clause T-units. (See Table 6.) Again, the most impressive gain is the gain in the number of words in multi-clause T-units from the second pretest to the second posttest for the experimental group. These subjects wrote more than double the number of words in multi-clause T-units on the second posttest than they did on the second pretest (cf. mean of 20.3 to 46.8). This gain was not matched by the control group's performance (18.3 to 24.2), nor was it matched by as proportionately a large gain in the number of words in single-clause T-units. This same trend is not found

¹² Griffin, *op. cit.*

in the performance of all the experimental subjects in the first pretest and posttest. Again, on this series of tests the performance of the experimental group is very closely matched by that of the control group, at least in the number of words in multi-clause T-units, the most crucial of the measurements for predicting growth in writing.

Table 7
Length of Single-clause, Multi-clause, and All T-units
and the Subordination Ratio

Group	Subordination Ratio		Length of T-units		Length of Multi-clause T-units		Length of Single-clause T-units	
	C Group	E Group	C Group	E Group	C Group	E Group	C Group	E Group
Pretest 1	26.3	23.7	7.0	6.9	11.2	10.0	6.5	6.4
Posttest 1	31.5	26.5	7.1	7.1	10.2	10.5	6.2	6.3
Pretest 2	21.2	20.3	8.2	8.7	13.3	13.2	7.4	7.7
Posttest 2	23.4	34.5	8.6	9.0	13.5	12.6	8.2	8.0
Hunt's Fourth Graders	22.2		8.6		13.6		7.2	

If this phenomenon is stated in the terms that Hunt¹³ uses, the startling discrepancy in the performance of the control group on the first pretest is more noticeable. (See Table 7.) Since the control group wrote a greater proportion of multi-clause T-units, their subordination ratio was much greater than that of the experimental group (cf. 31.5 to 26.5) on the first posttest. This trend, however, was reversed on the second posttest, where the experimental group had a much larger subordination ratio (cf. 34.5 to 23.4). Thus, it is reasoned that the contamination effect of the narration on the first posttest caused the control group to have a higher subordination ratio than the experimental group. Since this contamination effect was not operating on the second posttest, the experimental group had the higher subordination ratio. On the other measures, the experimental methodology seemed to have very little effect. Both the control group and the experimental group showed an

¹³ Hunt, *Differences in grammatical structures*, pp. 28, 22, and *Grammatical structures*, pp. 36, 38.

Table 8
Analysis of Variance: The Number of Multi-clause T-units

Source of Variance	Sum of Squares	df	Mean Square	F	P
PRETEST 1					
Between Categories	2.003	1	2.003	.956	.333
Within Categories	100.497	48	2.093		
Total	102.500	49			
POSTTEST 1					
Between Categories	.046	1	.046	.006	.935
Within Categories	325.573	48	6.782		
Total	325.620	49			
PRETEST 2					
Between Categories	.333	1	.333	.163	.688
Within Categories	98.086	48	2.043		
Total	98.420	49			
POSTTEST 2					
Between Categories	46.926	1	46.926	7.957	.007**
Within Categories	283.073	48	5.897		
Total	330.000	49			
Category 1 = C Group, N = 24; Category 2 = E Group, N = 26					
*Significant at the .05 level of confidence or less.					
**Significant at the .01 level of confidence or less.					
***Significant at the .001 level of confidence or less.					

increase on these measures from the first pretest to the last posttest, but neither of the groups showed any marked superiority over the other.

All this can be summarized in an analysis of variance of the scores of the two groups in the experiment. (See Table 8.) The experimental group did not evidence until the second posttest a statistically significant gain in the number of multi-clause T-units over the number used by the control group. This is not true for the number of single-clause T-units used. In this measure, the performance of the experimental group did not surpass the performance of the control group on the second posttest at a statistically significant level of confidence. The reason for this is that the experimental group on the second posttest wrote a proportionately greater number of multi-clause T-units and words in multi-clause T-units. Hence, even this measure indicates a favorable development in the writing

Table 9
Analysis of Variance: The Number of Single-clause T-units

Source of Variance	Sum of Squares	df	Mean Square	F	P
PRETEST 1					
Between Categories	3.971	1	3.971	.155	.695
Within Categories	1226.449	48	25.551		
Total	1230.419	49			
POSTTEST 1					
Between Categories	208.087	1	208.087	3.838	.056
Within Categories	2601.833	48	54.205		
Total	2809.920	49			
PRETEST 2					
Between Categories	12.162	1	12.162	.468	.497
Within Categories	1247.217	48	25.984		
Total	1259.380	49			
POSTTEST 2					
Between Categories	69.826	1	69.826	2.916	.094
Within Categories	1149.153	48	23.941		
Total	1218.980	49			

Category 1 = C Group, N = 24; Category 2 = E Group, N = 26

*Significant at the .05 level of confidence or less.

**Significant at the .01 level of confidence or less.

***Significant at the .001 level of confidence or less.

of the experimental group; the students in this group used a greater proportion of multi-clause T-units. In other words, these students wrote proportionately fewer simple sentences and proportionately more complex sentences than the control group students. The fact that the difference in the number of words in single-clause T-units between the experimental group and the control group almost reaches a statistically significant level of confidence (.05) on the first posttest indicates that the latter were not writing as well on the first posttest as they were on the second posttest. (See Table 9.)

SUMMARY AND CONCLUSION

The effect of systematic oral and written exercises on the writing of fourth-grade students can be summarized in three statements:

(1) Students who participated in these exercises wrote with greater freedom and facility than those who did not; hence, these students could write a greater number of words in a shorter period of time.

(2) Students who practiced certain sentence structures in their oral and written forms used these structures more frequently than those who did not.

(3) Students who practiced putting together sentences in their oral or written form so that simple sentences are formed into complex sentences use a greater proportion of complex sentences. For these three reasons, it has been judged that oral and written exercises have a favorable effect on the writing of fourth graders.